Developments in Neural Vision Technology

The visual system is a remarkable neural network that is able to extract vital information about the external visual world. The conversion of the dynamic visual input into processed electrical signals is performed by the retina, an extraordinary biological pixel detector that lines the back of the eye and transmits coded information to the brain. The brain does further processing and generates visual perceptions.

In this talk, after an introduction to the visual system, I will describe the technology and experimental methods we have developed and employ, in close collaboration with neurobiologists, to probe both the retina and the brain. These methods are based on large-scale multielectrode array systems that can record, and in some cases stimulate, the electrical activity of a large population of neurons. This project was inspired by the development of silicon microstrip detectors for high energy physics experiments.

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